LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) Optical metrology method for determining the three-dimensional topography of an orifice, in particular for the measurement of micrometric, tapered nozzles and other similar devices, using ~~illuminated~~ illumination means of the object to be analysed and observation means of the object to be analysed, which includes at least one camera, ~~characterised in that it comprises~~ the method comprising an initial step for checking that the image plane (z) for said illumination means coincides with the object plane for the observation means; the method further comprising the steps of:

- arranging the object to be analysed on a microscope slide with the greater diameter opening facing the illumination means;

- ~~centring~~ centering one of the orifices of the object to be analysed in the field of view of the observation means;

- bringing into focus by means of wide-field illumination the smaller diameter opening of the orifice to be analysed;

-measuring the diameter of the orifice as well as major defects ~~such as~~ including the absence of an orifice [[or]] and large-scale deformations;

~~-modifying~~ changing the focus plane [[(z_i)]] of the inner part of the orifice of the object ~~by changing it~~ to another focus plane [[(z_{i+1})]];

- measuring the contour of the orifice in the other focus plane [[(z_{i+1})]] in order to determine the inner topography of the orifice by projecting a sequence of patterns and measuring the position of the points of the contour of the orifice when the images of the projected pattern and their reflection on the inner walls of the orifice are superimposed on the plane of the camera;

- repeating the above process for a number of planes [[(z_i... z_n)]] inside the orifice;

- processing the data for the contours measured in the different planes to obtain a three-dimensional geometrical representation of the inner topography of the orifice, as well as its characteristic parameters [[()]]including maximum and minimum diameters of the orifice, slope

of the wall of the orifice, deviations from nominal figure, and position of the axis of the orifice[[, etc.)]].

2. (Previously Presented) Method as claimed in claim 1, wherein said sequence of patterns are circular patterns of a given, increasing radius.

3. (Currently Amended) Method as claimed in claim 1, wherein the points of the contour [[on]] in the focus plane (z_i) are measured using a cylindrical coordinate system with a resolution of 360-720 points measured along the length of the contour of the orifice.

4. (Previously Presented) Method as claimed in claim 1, wherein a series of images ranging from 10 to 25 in number is acquired in order to obtain the points measured along the contour of the orifice.

5. (Previously Presented) Method is claimed in claim 1, wherein the spacing between focus planes (z_i) ranges from 1 to 10 μm.

6. (Currently Amended) Method as claimed in claim 1, wherein the step of ~~modifying~~ changing the focus plane [[(z_i)]]of the object being analysed [[by]] to another focus plane [[(z_{i+1})]] is repeated by a given number of times to obtain values in just as many focus planes [[(z_n)]] within the orifice of the object, depending on the thickness of the object being analysed and the requirements of the analysis parameters.

7. (Currently Amended) Apparatus for determining three-dimensional topographies according to the method as claimed in claim1, ~~wherein~~ and in particular for measuring micrometric tapered nozzles and other, similar devices, wherein the apparatus ~~being characterized in that it~~ comprises illumination means, observation means and computer processing means, said illumination means comprising a microscope objective associated with said illumination means, a light source, a pattern representation system, [[an]] and an optical

system associated with the illumination means; and said observation means comprising a microscope objective associated with the observation means, an optical system associated with the observation means, and at least one camera adapted to acquire a series of images, one image of the series of images for each of the sequence of patterns projected.

8. (Currently Amended) Apparatus as claimed in claim 7, wherein it includes a mirror that ~~deviates~~ reflects the light emitted from said light source at a certain angle towards said optical system.

9. (Currently Amended) Apparatus as claimed in claim 8, wherein the angle of ~~deviation~~ reflection of the light caused by the mirror is 90°.

10. (Currently Amended) Apparatus as claimed in claim 7, wherein the objective associated with the illumination means is an 100X magnification SLWD objective (super-long working distance), ~~whereas~~ and the objective associated with the observation means is a 50X magnification SLWD objective (super-long working distance), said camera being [[a]] an 1/3" camera.

11. (Currently Amended) Apparatus as claimed in claim 7, wherein said pattern representation system is controlled by a computer that forms part of said computer processing means and allows ~~to both visualise~~ the visualization of a wide-field illumination and ~~to generate~~ the generation of circular patterns of different diameters, said patterns being projected by means of said objective with said optical system inside the orifice of the object being analysed.

12. (Currently Amended) Apparatus as claimed in claim 7, wherein said pattern representation system [[is]] includes a liquid crystal microdisplay (LCD).

13. (Currently Amended) Apparatus as claimed in claim 7, wherein said pattern representation system [[is]] includes a liquid-crystal-on-silicon (LCOS) microdisplay, and ~~also includes~~ a light beam splitter.

14. (Previously Presented) Apparatus as claimed in claim 7, wherein said light source emits a broadband spectrum of light.

15. (Previously Presented) Apparatus as claimed in claim 7, wherein said light source is a laser and the pattern on the inner surface of the orifice is generated using a scanner.

16. (Currently Amended) Apparatus as claimed in claim 7, wherein it includes an additional camera ~~918)~~, said apparatus further including a light beam splitter.

17. (Previously Presented) Apparatus as claimed in claim 7, wherein said camera or cameras are CCD cameras.

18. (Previously Presented) Apparatus as claimed in claim 7, wherein said camera or cameras are CMOS cameras.